

ABSTRACT:

A polymer electrolyte fuel cell comprising a plurality of membrane electrode assemblies laminated via separators, each assembly comprising a membrane-form  
5 polymer electrolyte and a pair of a fuel electrode and an air electrode facing each other via the electrolyte, wherein as the separator, a separator made of a metal/non-metal composite material, is used which has a fuel gas channel, an oxidant channel and a fluid channel  
10 for cooling, and at least side walls of the fluid channel for cooling are made of metal and at least faces which are in contact with the membrane electrode assemblies are made of non-metal. The separators are excellent in the dimensional stability and air-tightness and light in  
15 weight, and the polymer electrolyte fuel cell having such separators can maintain a high performance constantly for a long time.